

**Translation**

PATENT COOPERATION TREATY



**PCT**

**INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY**  
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

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| Applicant's or agent's file reference<br>HP220   | FOR FURTHER ACTION<br>See Form PCT/IPEA/416                                |  |
| International application No.<br>PCT/JP2003/012875   | International filing date (day/month/year)<br>08 October 2003 (08.10.2003) | Priority date (day/month/year)<br>09 October 2002 (09.10.2002) |
| International Patent Classification (IPC) or national classification and IPC<br>G03F 7/11, H01L 21/027 |  |  |
| Applicant<br>NISSAN CHEMICAL INDUSTRIES, LTD.  |  |  |

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 7 sheets, including this cover sheet.

3. This report is also accompanied by ANNEXES, comprising:

a. ☐ (sent to the applicant and to the International Bureau) a total of \_\_\_\_\_ sheets, as follows:

☐ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).

☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.

b. ☐ (sent to the International Bureau only) a total of \_\_\_\_\_, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

☒ Box No. I Basis of the report

☐ Box No. II Priority

☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

☐ Box No. IV Lack of unity of invention

☒ Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

☒ Box No. VI Certain documents cited

☒ Box No. VII Certain defects in the international application

☒ Box No. VIII Certain observations on the international application

|  |   |
|--|---|
| Date of submission of the demand<br>09 April 2004 (09.04.2004) | Date of completion of this report<br>04 January 2005 (04.01.2005) |
| Name and mailing address of the IPEA/JP                        | Authorized officer  |
| Facsimile No.  | Telephone No.   |

## Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

- ☒ This report is based on translations from the original language into the following language \_\_\_\_\_, which is language of a translation furnished for the purpose of:
- ☐ international search (under Rules 12.3 and 23.1(b))
- ☐ publication of the international application (under Rule 12.4)
- ☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the elements of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

- ☐ The international application as originally filed/furnished
- ☐ the description:  
pages \_\_\_\_\_, as originally filed/furnished  
pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_  
pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☐ the claims:  
pages \_\_\_\_\_, as originally filed/furnished  
pages\* \_\_\_\_\_, as amended (together with any statement) under Article 19  
pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_  
pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☐ the drawings:  
pages \_\_\_\_\_, as originally filed/furnished  
pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_  
pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to sequence listing (*specify*): \_\_\_\_\_

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to sequence listing (*specify*): \_\_\_\_\_

\* If item 4 applies, some or all of those sheets may be marked "superseded."

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

|                               |        |          |     |
|-------------------------------|--------|----------|-----|
| 1. Statement                  |        |          |     |
| Novelty (N)                   | Claims | 2-10     | YES |
|                               | Claims | 1, 11-19 | NO  |
| Inventive step (IS)           | Claims | 2-9      | YES |
|                               | Claims | 1, 10-19 | NO  |
| Industrial applicability (IA) | Claims | 1-19     | YES |
|                               | Claims |          | NO  |

2. Citations and explanations

Document 1: JP 2002-107938 A (Shin Etsu Chem. Co., Ltd.), 10 April 2002, (Family: none)

Document 2: JP 11-279523 A (Kyodo Chem. Co., Ltd.), 12 October 1999, (Family: none)

The inventions set forth in claims 1 and 11 to 19 are disclosed in document 1 (claims, paragraphs 0001 to 0007 and 0024 to 0026); therefore, they lack novelty and do not involve an inventive step.

Document 1 discloses a feature wherein an epoxy compound such as tris(2, 3-epoxypropyl) isocyanurate is introduced into the side chain of a polymer as a pendant group; therefore, document 1 effectively discloses compounds which correspond to triazine trione compounds that have a hydroxyalkyl structure.

In addition, document 1 discloses an antireflection film that exhibits a k value of approximately 0.5.

The invention set forth in claim 10 does not involve an inventive step in the light of document 1.

It would be easy for a person skilled in the art to use other cross-linking agents concomitantly with these compounds.

The invention set forth in claim 1 lacks novelty and does not involve an inventive step in the light of

document 2.

The ultraviolet ray-absorbing film that is disclosed in document 2 exhibits an antireflection function.

The supported portions of the inventions set forth in claims 2 to 9, as presented in Box VIII, are not disclosed in any of the documents that are cited in the international search report, and are not obvious to a person skilled in the art.

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/JP2003/012875

## Box No. VI Certain documents cited

## 1. Certain published documents (Rule 70.10)

| Application No.<br>Patent No. | Publication date<br>(day/month/year) | Filing date<br>(day/month/year) | Priority date (valid claim)<br>(day/month/year) |
|-------------------------------|--------------------------------------|---------------------------------|---|
| WO 02/086624 A1               | 31 October 2002 (31.10.2002)         | 10 April 2002 (10.04.2002)      | 10 April 2001 (10.04.2001)                      |
| [E, X]                        |                                      |                                 |   |

## 2. Non-written disclosures (Rule 70.9)

| Kind of non-written disclosure | Date of non-written disclosure<br>(day/month/year) | Date of written disclosure<br>referring to non-written disclosure<br>(day/month/year) |
|--------------------------------|--|---|
|                                |  |   |

## VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

(a) With regards to the disclosures pertaining to the M group in claim 2, it is unclear whether the disclosure "which can be substituted with" modifies "alkyl group...cyano group."

Therefore, this disclosure has been interpreted as indicating that 'M represents a benzene ring, a naphthalene ring or an anthracene ring, which can be substituted with an alkyl group...a cyano group...or an alkylthio group with a carbon number between 1 and 6.'

(b) It is unclear what sort of structure is represented by the wavy line portions of formulas (6), (7), (8) and (9) as set forth in claims 4 and 5.

## VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

(a) With regards to the composition for forming an antireflection film that is set forth in claims 1 to 14, the disclosure "antireflection film" merely specifies a characteristic of the film; consequently, the scope of the film is unclear. In more detail, the description discloses a "composition for forming an antireflection film that decreases the reflection of irradiated exposure light from the substrate to the photoresist layer that is coated upon the substrate during a lithography process for the production of a semiconductor production device."

(b) There are no specific disclosures in relation to the "nitrogen ring-shaped...triazine trione compound,...triazine trione oligomer compound or...triazine trione polymer compound," other than the products obtained by reacting a compound represented by formula (20) or (17), which comprises three Br groups or two I substituents, with a compound represented by formula (15), as set forth in claim 9 (example compositions 1 to 4, 6, 7 and 15), or the products obtained by reacting a compound represented by formula (10), which comprises a propenyl group or a 2, 3-epoxypropyl group, with a compound represented by formula (11) or (12), as set forth in claim 6 (example compositions 8 to 13).